

EXPRESS MAIL NO. EVD32647545

#5

PTO/SB/08B(10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 2 of 3**Complete if Known**

Application Number	09/607,403
Filing Date	June 30, 2000
First Named Inventor	Chowdhury
Group Art Unit	2786
Examiner Name	To be assigned
Attorney Docket Number	34769/187604

**RECEIVED**  
JAN 08 2003  
Technology Center 2100**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
AB	1	SIMON SZYKMAN and JONATHAN CAGAN; "Automated Generation of Optimally Directed Three Dimensional Component Layouts"; DE-Vol. 65-1, Advances in Design Automation 1993, pp. 527-37, Volume 1; American Society of Mechanical Engineers, New York, NY, USA.	
	2	ZUO DAI and JIANZHONG CHA; "A Hybrid Approach of Heuristic and Neural Network for Packing Problems"; DE-Vol. 69-2, Advances in Design Automation - 1994, pp. 117-23, Volume 2; American Society of Mechanical Engineers, New York, NY, USA.	
	3	ZUO DAI, JIANZHONG CHA and JUNLIANG YUAN; "An Octree-Based Heuristic Algorithm for 3-D Packing"; DE-Vol. 69-2, Advances in Design Automation - 1994, pp. 125-33, Volume 2; American Society of Mechanical Engineers, New York, NY, USA.	
	4	RAHUL DIGHE and MARK J. JAKIELA; "Solving Pattern Nesting Problems with Genetic Algorithms Employing Task Decomposition and Contact Detection"; Journal Article; Evolutionary Computation 3(3): pp. 239-266, 1996, Massachusetts Institute of Technology.	
	5	MANUEL E. SOSA; "Optimal Packing of Three Dimensional Shapes Using Genetic Algorithms"; Masters Thesis; Department of Mechanical Engineering, Massachusetts Institute of Technology, June 1996.	
	6	"Ryder paves the way for Delfour in the UK"; Magazine Article; European Supply Chain Decision; <a href="http://www.delfour.com/Public/Del4RyderArt/Del4RyderLarge1.htm">http://www.delfour.com/Public/Del4RyderArt/Del4RyderLarge1.htm</a> , 06-07-1999.	
	7	JOHN A. GEORGE et al; "Packing Different-Sized Circles Into a Rectangular Container"; European Journal of Operational Research 84 (1995); pp. 693-712	
	8	BERTHOLD KROGER; "Guillotineable Bin Packing: A Genetic Approach"; European Journal of Operational Research 84 (1995); pp. 645-661	
	9	KHUSHRO SHAHOOKAR and PINAKI MAZUMDER; "A Genetic Approach to Standard Cell Placement Using Meta-Genetic Parameter Optimization"; IEEE Transactions on Computer-Aided Design, Vol. 9 (1990); pp. 500-511	
	10	WEISHUANG QU and JERRY L. SANDERS; "Sequence Selection of Stock Sheets in Two-Dimensional Layout Problems"; International Journal of Production Research, Vol. 27 (1989); pp. 1553-1571	
✓	11	WEISHUANG QU and JERRY L. SANDERS; "A Nesting Algorithm For Irregular Parts and Factors Affecting Trim Losses"; International Journal of Production Research, Vol 25 (1987); pp. 381-397	

Examiner  
Signature*Samuel B. Bork*Date  
Considered

1/14/2004

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

EXPRESS MAIL NO. EV 0106475 US

#5

PTO/SB/088(10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 3 of 3

**Complete if Known**

Application Number	09/607,403
Filing Date	June 30, 2000
First Named Inventor	Chowdhury
Group Art Unit	2786
Examiner Name	To be assigned
Attorney Docket Number	34769/187604

RECEIVED  
JAN 08 2003  
Technology Center 2100**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
AB	12	Y.K.D.V. PRASAD and PROFESSOR S. SOMASUNDARAM; "CASNS-A Heuristic Algorithm for the Nesting of Irregular-Shaped Sheet-Metal Blanks"; Computer-Aided Engineering Journal, Vol. 8 (1991); pp.69-73	
↓	13	ANTONIO ALBANO and GUISEPPE SAPUPPO; "Optimal Allocation of Two-Dimensional Irregular Shapes Using Heuristic Search Methods"; IEEE Transactions on Systems, Man, and Cybernetics, Vol. SMC-10 (1980); pp. 242-248	
↓	14	B.T. CHEOK and A.Y.C. NEE; "Algorithms For Nesting of Ship/Offshore Structural Plates"; Advances in Design Automation Vol. 2 (1991); pp. 221-226	

Examiner  
SignatureDate  
Considered

1/14/2004

\* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

PRESS MAIL NO. EV032106475US

PTO/SB/08A (10-01)

Approved through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 3

**Complete if Known**

Application Number	09/607,403
Filing Date	06/30/00
First Named Inventor	Chowdhury
Group Art Unit	2786
Examiner Name	Unknown
Attorney Docket Number	34769-187604

**RECEIVED**  
JAN 8 2003  
Technology Center 2106**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
AB ↓ ✓	1	US-4,554,625	11-19-1985	Otten	
	2	US- 4,554,635	11-19-1985	Levine	
	3	US- 4,630,219	12-16-1986	DiGiacomo et al	
	4	US- 4,758,960	07-19-1988	Jung	
	5	US- 4,941,183	07-10-1990	Bruder et al.	
	6	US- 5,258,917	11-02-1993	Bruder et al.	
	7	US- 5,262,956	11-16-1993	DeLeeuw	
	8	US- 5,363,313	11-08-1994	Lee	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				

Examiner  
SignatureSamuel BrothDate  
Considered1/14/2004

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Form PTO-1449  
(Rev. 2-32)U.S. Department of  
Patent & Trade

Atty. Docket No.

Serial No.

INFORMATION DISCLOSURE STATEMENT  
(Use several sheets if necessary)

34769-187604

09/607,403

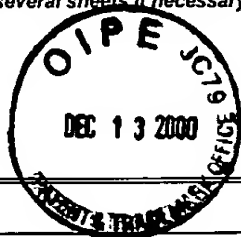
Applicant

Ashfaq Chowdhury, Richard F. Lane, Jennifer Janke

Filing Date

06/30/00

Group



## U.S. PATENT DOCUMENTS

Examine Initial		Document Number	Date	Name	Class	Sub-Class	Filing Date (if appropriate)
AB	1	3,705,410	12/5/72	Kooy, et al.	444	1	1/21/71
	2	RE33,416	10/30/90	Konishi, et al.	364	478	2/3/89
	3	5,175,692	12/29/92	Mazouz, et al.	364	478	5/24/91
	4	5,291,396	3/1/94	Calcerano, et al.	364	401	1/10/92
	5	5,379,229	1/3/95	Parsons, et al.	364	478	6/18/92
	6	5,430,831	7/4/95	Snellen	395	133	3/19/93
	7	5,493,491	2/20/96	Calcerano, et al.	364	403	1/27/94
	8	5,501,571	3/26/96	Van Durrett, et al.	414	786	1/21/93
	9	5,720,157	2/24/98	Ross	53	445	3/28/96
	10	5,748,762	5/5/98	Guez	382	111	3/1/96
	11	5,844,807	12/1/98	Anderson, et al.	364	478.05	11/9/95
	12	5,893,076	4/6/99	Hafner, et al.	705	28	1/16/96
	13	5,815,398	9/29/98	Dighe, et al.	364	478.05	1/16/96
	14	5,831,662	11/3/98	Payton	348	7	4/4/96
V	15	5,703,781	12/30/97	Martell, et al.	364	470.06	9/5/96

## FOREIGN PATENT DOCUMENTS

		Document	Date	Country	Class	Sub-class	Translation Yes/No
--	--	----------	------	---------	-------	-----------	--------------------

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AB	1	Ilkka Tapio Ikonen, "A Genetic Algorithm For A Three-Dimensional Non-Convex Bin Packing" (Abstract), <u>Dissertation Abstracts</u> , vol. 59-07B, 1998, pp. 3634, dissertation 11/98.					
	2	Randy L. House & Cihan H. Daghlil, "Approach to Three Dimensional Packing Using Genetic Algorithms" (Abstract), <u>Intelligent Engineering Systems Through Artificial Neural Networks</u> , Vol. 2, 1992, pp. 937-942.					
	3	Takashi Kawakami & Yukinori Kakazu, "Strategy Acquisition of the 3-D Packing Problem in Multiagent Environment (GA-based Hierarchical Tuning)" (Abstract), <u>Nippon Kikai Gakkai Ronbunshu, C Hen / Transactions of the Japan Society of Mechanical Engineers, Part C</u> , vol. 60, no. 577, Sep. 1994, pp. 3219-3225.					
	4	I.T. Ikonen, W.E. Biles, J.E. Lewis, A. Kumar, & R.K. Ragade, "GARP: Genetic Algorithm for Part Packing in a Rapid Prototyping Machine" (Abstract), <u>Proceedings of the SPIE - The International Society for Optical Engineering</u> , vol. 3517, 1998, pp. 54-62.					
	5	J.E. Lewis, R.K. Ragade, A. Kumar, W.E. Biles, & I.T. Ikonen, "Using Distributed Genetic Algorithms in Three-Dimensional Bin Packing for Rapid Prototyping Machines" (Abstract), <u>Proceedings of the SPIE - The International Society for Optical Engineering</u> , vol. 3517, 1998, pp. 45-53.					
	6	S.P. Larcombe, D.J. Pendergast, N.A. Thacker, & P.A. Ivey, "Initial Development of a Genetic Algorithm to Automate System Implementation in a Novel Electronic Packaging Technology" (Abstract), <u>Second International Conference on Genetic Algorithms in Engineering Systems: Innovations and Applications</u> , Conf. Publ. No. 446, 1997, pp. 486-91.					
V	7	S.P. Larcombe, D.J. Pendergast, N.A. Thacker, & P.A. Ivey, "Using Genetic Algorithms to Automate System					

AB		Implementation in a Novel Three-Dimensional Packaging Technology" (Abstract), <u>Proceedings International Conference on Computer Design. VLSI in Computers and Processors</u> , 1996, pp.274-9.
	8	T. Kawakami & Y. Kakazu, "A GA-based Hierarchical Tuning of the 3-D Packing Strategy in a Multiagent Environment" (Abstract), <u>Proceedings 1994 Japan-U.S.A. Symposium on Flexible Automation - A Pacific Rim Conference</u> , vol. 3, 1994, pp. 1319-26.
	9	J.-L. Lin, B. Foote, S. Pulat, C.-H. Chang, & J. Y. Cheung, "Hybrid Genetic Algorithm for Container Packing in Three Dimensions" (Abstract), <u>Proceedings. The Ninth Conference on Artificial Intelligence for Applications</u> , 1993, pp. 353-9.
	10	A.L. Corcoran & R.L. Wainwright, "A Genetic Algorithm for Packing in Three Dimensions" (Abstract), <u>Applied Computing: Technological Challenges of the 1990's. Proceedings of the 1992 ACM/SIGAPP Symposium on Applied Computing</u> , 1992, pp. 1021-30.
	11	T. Kawakami, M. Minagawa, & Y. Kakazu, "Auto Tuning of 3-D Packing Rules Using Genetic Algorithms" (Abstract), <u>Proceedings IROS '91. IEEE/RSJ International Workshop on Intelligent Robots and Systems '91. Intelligence for Mechanical Systems</u> , 1991, vol. 3, pp. 1319-24.
V	12	S.S. Tong, "Integration of Symbolic and Numerical Methods for Optimizing Complex Engineering Systems" (Abstract), <u>IFIP Transactions A, Computer Science and Technology</u> , vol. A-2, 1992, pp.3-20.
Samuel Brodn		DATE CONSIDERED 1/14/2004

Form PTO-FB A820  
(also form PTO-1449)

Patent and Trademark Office- US DEPARTMENT OF COMMERCE

